QUARTERLY

OF

APPLIED MATHEMATICS

EDITED BY

H. W. BODE D. C. DRUCKER I. S. SOKOLNIKOFF

G. F. CARRIER U. GRENANDER P. S. SYMONDS

P. J. DAVIS E. T. ONAT J. L. SYNGE

W. F. FREIBERGER, Managing Editor

WITH THE COLLABORATION OF

M. A. BIOT J. P. DEN HARTOG C. FERRARI J. N. GOODIER F. D. MURNAGHAN W. R. SEARS SIR GEOFFREY TAYLOR

L. N. BRILLOUIN H. W. EMMONS P. GERMAIN G. E. HAY E. REISSNER SIR RICHARD SOUTHWELL J. J. STOKER

J. M. BURGERS W. FELLER J. A. GOFF P. LE CORBEILLER 8. A. SCHELKUNOFF S. P. TIMOSHENKO

MANAGING EDITOR, 1943-1965 W. PRAGER

Printed by the
WILLIAM BYRD PRESS, INC.
Richmond, Virginia

CONTENTS

William F. Ames (see John F. Sontowski)	
D. E. Amos: On half-space solutions of a modified heat equation	359
S. T. Ariaratnam (see R. N. Dubey)	
S. T. Ariaratnam and R. N. Dubey: Some cases of bifurcation in elastic-plastic	
solids in plane strain	349
Richard B. Barrar: Close-in orbits in the restricted problem of three dimensions	396
J. A. Belward: The solution of an integral equation of the first kind on a finite	313
interval	313
	481
Bruno A. Boley and Harvey P. Yagoda: The starting solution for two-dimensional	401
heat conduction problems with change of phase	223
S. Breuer: Lower bounds on work in linear viscoelasticity	139
H. H. Chiu: Theory of irreducible operators of linear systems	87
Leonard Y. Cooper: Constant surface heat of a variable conductivity half-space	173
G. L. Curme and E. Hille: Classical analytic representations	185
J. L. Dais: On stress-strain relations for isotropic rigid perfectly plastic solids	263
W. A. Day: A note on useful work	260
W. A. Day: Useful strain histories in linear viscoelasticity	255
P. C. T. De Boer: Most general solution of a multiple linear operator equation .	537
R. N. Dubey (see S. T. Ariaratnam)	551
R. N. Dubey and S. T. Ariaratnam: Bifurcation in elastic-plastic solids in plane	
stress	381
Clive L. Dym and Herbert Reismann: On the time-dependent heat conduction	
and thermoelastic problems	121
H. Frank and S. L. Hakimi: Parametric synthesis of statistical communication	
nets	105
G. A. C. Graham: Two extending crack problems in linear viscoelasticity theory	497
U. Grenander: Foundations of pattern analysis	1
S. L. Hakimi (see H. Frank)	
M. Hayes, N. Laws and R. B. Osborn: The paucity of universal motions in thermo-	
elasticity	416
Michel Hénon: Numerical study of quadratic area-preserving mappings	291
E. Hille (see G. L. Curme)	
J. E. Hilliard (see E. M. Philofsky)	
W. H. Ingram: On the inversion of the Cauer-Routh matrix	215
A. J. Jerri: Eigenfunctions corresponding to the band pass kernel with large	
center frequency	523
R. P. Kanwal: Integral equations formulation of classical elasticity	57
G. F. Kohlmayr: Characterization of single-blow temperature responses by first	
moments	161
Kurt Kreith: A variational principle for the first eigenvalue of a semi-free mem-	
brane	125

J. R. Kuttler and V. G. Sigillito: Lower bounds for sloshing frequencies	405
C. Donald La Budde and G. R. Verma: On the computation of a generalized inverse	
of a matrix	391
S. K. Lakshmana Rao: Decay of the kinetic energy of micropolar incompressible	
fluids	278
R. W. Lardner: The linear theory of second-grade elastic materials	323
N. Laws (see M. Hayes)	
Jay A. Leavitt: A power series method for solving nonlinear boundary value	
problems	67
L. E. Levine: Unsteady, self-similar, two-dimensional simple wave flows	399
J. F. Loeber (see G. C. Sih)	
T. J. Moran (see P. R. Sethna)	
D. S. Moseley: Further properties of the non-separable solutions of the Helmholtz	
wave equation	451
R. B. Osborn (see M. Hayes)	
Robert Payton: Two-dimensional pulse propagation in a two-parameter aniso-	
tropic elastic solid	147
E. M. Philofsky and J. E. Hilliard: On the measurement of the orientation distri-	
bution of lineal and areal arrays	79
William Prager: On the formulation of constitutive equations for living soft	
tissues	128
A. J. Pritchard: On nonlinear stability theory	531
Daulat Ram (see P. C. Rath)	001
K. B. Ranger: Hydromagnetic flow exterior to a rotating cylinder	409
P. C. Rath and Daulat Ram: On the classical stability conditions for a spinning	103
shell	247
Herbert Reismann (see Clive L. Dym)	
E. Y. Rodin: A Riccati solution for Burgers' equation	541
Gerald Rosen: A necessary condition for the existence of singularity-free global	011
solutions to nonlinear ordinary differential equations	133
K. R. Schneider: Estimations of the lengths and periods of closed trajectories	281
Barry S. Seidel (see John F. Sontowski)	201
P. R. Sethna and T. J. Moran: Corrections to the paper "Some nonlocal results	
for weakly nonlinear dynamical systems"	285
Bernard Sherman: Continuous dependence and differentiability properties of the	200
solution of a free boundary problem for the heat equation	427
R. C. Shieh: On certain closed-form solutions to problems of wave propagation	461
in a strain-hardening rod	461
V. G. Sigillito (see J. R. Kuttler)	401
G. C. Sih and J. F. Loeber: Wave propagation in an elastic solid with a line of	
discontinuity or finite crack	193
R. A. Smith: Period bound for autonomous Liénard oscillations	516
John F. Sontowski, Barry S. Seidel and William F. Ames: On stability of the flow	510
of a stratified gas over a liquid	225
R. P. Srivastav: On the use of Fourier transforms for the solution of two-dimen-	335
	546
sional problems of elastostatics	270
Franz Stetter: On best quadrature of analytic functions	210

Marek Szalek: Error estimates for some variational methods applicable to scatter-	
ing and radiation problems	473
T. C. T. Ting: Elastic-plastic boundaries in the propagation of plane and cylindrical	
Waves of combined stress	441
Y. M. Tsai: Stress distributions in elastic and viscoelastic plates subjected to	
symmetrical rigid indentations	371
G. R. Verma (see C. Donald La Budde)	
Chang-Yi Wang: The impulsive starting of a sphere	273
Peter C. C. Wang: On incidence matrices	509
Charles F. Weber: A theorem on the representation of potential flows having	
unbounded free surfaces	267
Chien-Heng Wu: Tube to annulus—an exact nonlinear membrane solution	489
Harvey P. Yagoda (see Bruno A. Boley)	
Jin Y. Yen: An algorithm for finding shortest routes from all source nodes to a	
given destination in general networks	526

BOOK REVIEWS

VOLUME XXVII

1969

J. H. Ahlberg: Application of optimal control theory to computer controller design,	
by William S. Widnall	290
H. A. Antosiewicz: Numerical methods for two-point boundary-value problems,	
by Herbert B. Keller	550
M. J. Beckmann: The economics of uncertainty, by Karl Henrik Borch	560
Joan M. Bennett: Computer solution of linear algebraic systems, by George B.	
Forsythe and Cleve B. Moler.	138
Stefan Bergman: Conformal mapping on Riemann surfaces, by H. Cohn	422
R. P. Boas: Hilbert spaces of entire functions, by Louis de Branges	557
G. T. Cargo: The theory of cluster sets, by E. F. Collingwood and A. J. Lohwater	287
G. M. Clemenco: Theory of orbits: the restricted problem of three bodies, by Victor	
Szebehely	551
Tore Dalenius: Forest biometrics, by Michail Prodan	560
Philip J. Davis: Functions of a complex variable; constructive theory, by V. I. Smirnov	
and N. A. Lebedev	556
Philip J. Davis: A handbook of numerical matrix inversion and solution techniques,	
by Joan R. Westlake	136
J. Dieudonné: Integrals and operators, by J. E. Segal and R. E. Kunze	425
R. C. DiPrima: Stability of parallel flows, by Robert Betchov and William O.	
Criminale, Jr	426
S. E. Dreyfus: Graphs, dynamic programming, and finite games, by A. Kaufmann	136
A. Erdélyi: Praktische Funktionenlehre, by Friedrich Tölke	556
I. Flügge-Lotz: Strömungs- und Temperaturgrenzschichten, by Alfred Walz	421
W. M. Greenlee: Maximum principles in differential equations, by Murray H.	
Protter and Hans F. Weinberger	135
Jack K. Hale: Stability of motion, by Wolfgang Hahn	137
Marshall Hall, Jr.: Varieties of groups, by Hanna Neumann	554
J. Hartmanis: Algebraic theory of machines, languages and semigroups, by M. A.	001
Arbib	558
R. Hide: The theory of rotating fluids, by H. P. Greenspan	557
Wassily Hoeffding: Einführung in die mathematische Statistik, by L. Schmetterer	289
C. A. Hurst: The logic of special relativity, by S. J. Prokhovnik	286
R. L. Ingraham: Lectures on quantum field theory, by P. A. M. Dirac	424
R. L. Ingraham: Nuclear forces: introduction to theoretical nuclear physics, by	767
Gernot Eder	555
R. L. Ingraham: Théorie des groupes, by Henry Bacry	554
Rufus Isaacs: Theory of max-min and its application to weapons allocation problems	001
by John M. Danskin	549
Yuji Ito: Introduction to measure and probability, by J. F. C. Kingman and S. J.	349
	553
Taylor	333

R. Kalaba: Dynamic programming: sequential scientific management, by A. Kauf-	
mann and R. Cruon	557
R. E. Kalman: Discontinuous and optimal control, by I. Flügge-Lotz	552
A. Kihlberg: Darstellungen von Gruppen, by H. Boerner	550
J. P. LaSalle: Optimization in control theory and practice, by I. Gumowski and	
C. Mira	551
D. H. Lehmer: Random number generators, by Birger Jansson	421
Paul R. Paslay: Principles of structural stability, by Hans Ziegler	425
A. J. Rainal: Topics in the theory of random noise, by R. L. Stratonovich	288
R. M. Redheffer: Lectures on functional equations and their applications, by Janos	
Aczél	554
Emilio Roxin: Foundations of optimal control theory, by E. B. Lee and L. Markus.	135
Edward Saibel: Statistical continuum theories, by Mark J. Beran	421
Carl-Erik Sarndal: The elements of probability and sampling, by Frank A. Friday .	555
J. C. Shepherdson: Set theory and the continuum hypothesis, by Paul J. Cohen	422
J. R. Shoenfield: Foundations of constructive analysis, by Erret Bishop	287
Walter A. Strauss: Scattering theory, by Peter D. Lax and Ralph S. Phillips	561
Jerome H. Weiner: Thermoelasticity, by Heinz Parkus	559

